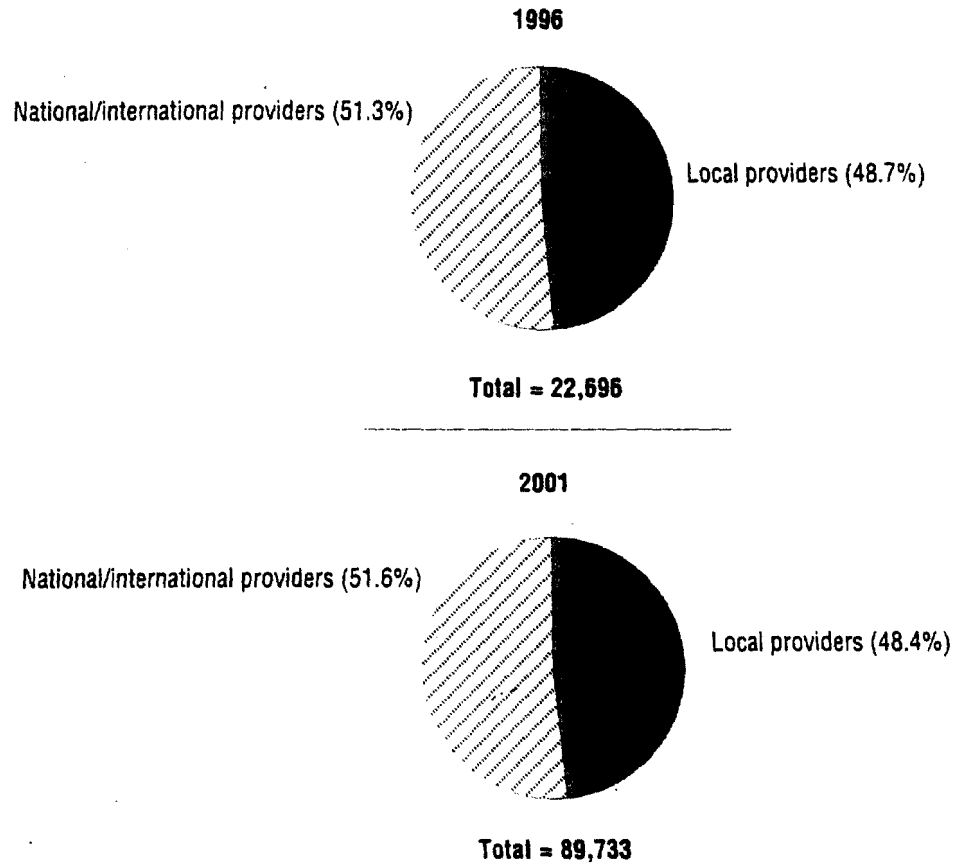
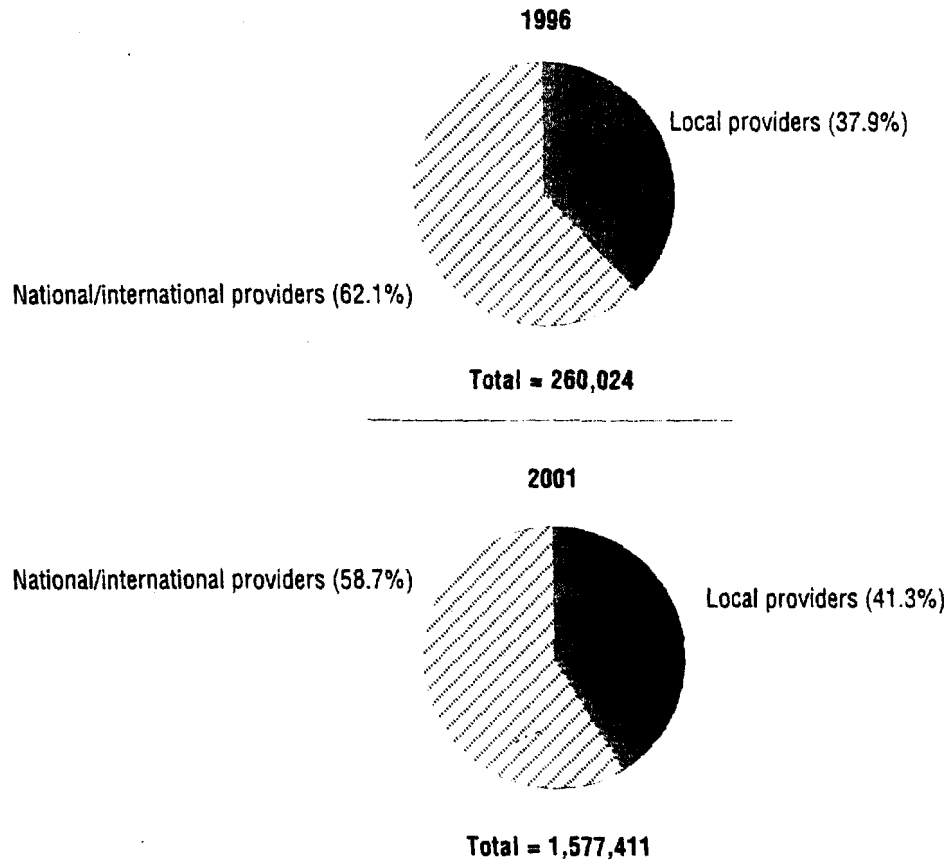


Figure 13
U.S. Frame Relay Customer Share by Provider Segment, 1996 and 2001



Source: International Data Corporation, 1997

Figure 14
U.S. Frame Relay Port Installed Base Share by Provider Segment, 1996 and 2001

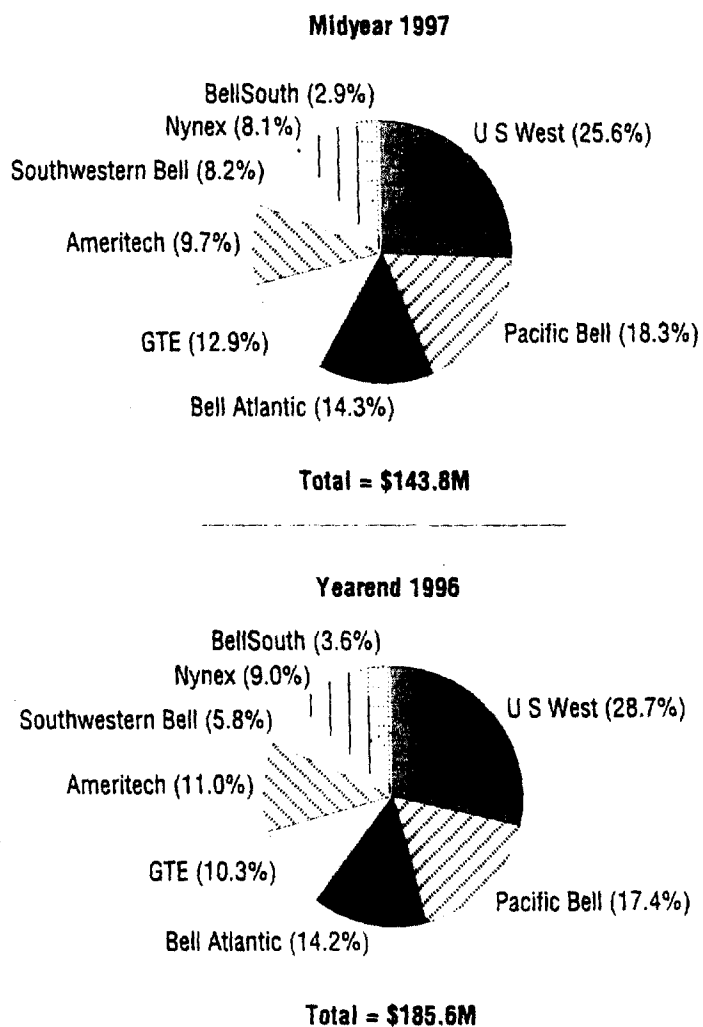


Source: International Data Corporation, 1997

Local Frame Relay Market Share and Trends

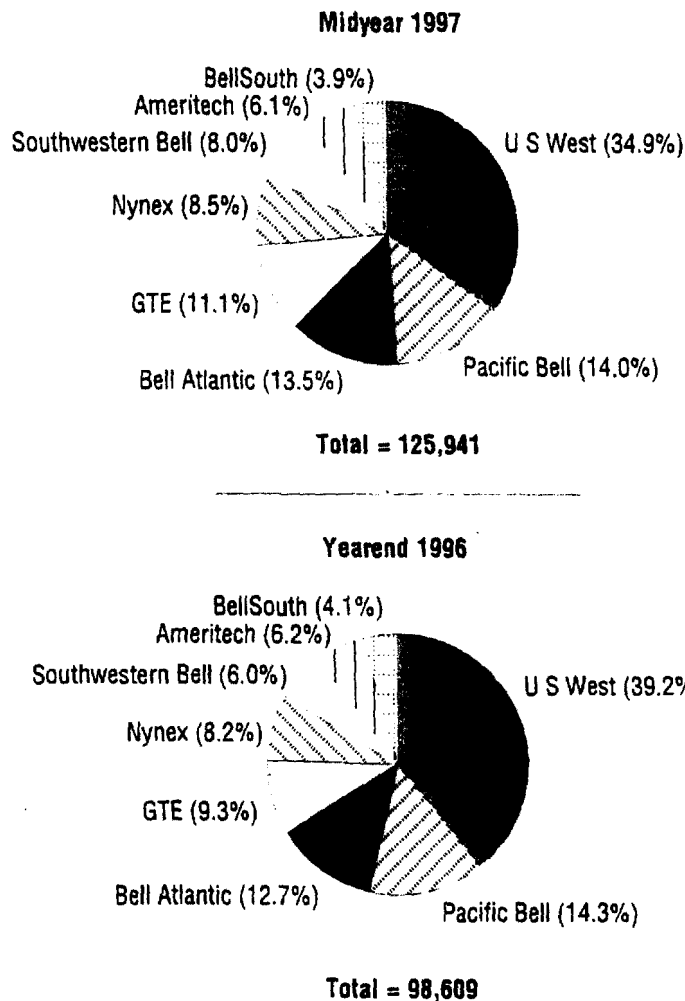
The market for local frame relay services reached \$185 million in 1996. Figures 15 and 16 show local frame relay market shares by revenue and by ports for midyear 1997 and yearend 1996. U S West leads the market on both measures, but other carriers are catching up as they intensify their frame relay marketing efforts.

Figure 15
U.S. Local Frame Relay Service Revenue Share by Provider, Midyear 1997 and Yearend 1996



Source: International Data Corporation, 1997

Figure 16
U.S. Local Frame Relay Service Port Installed Base Share by Provider,
Midyear 1997 and Yearend 1996

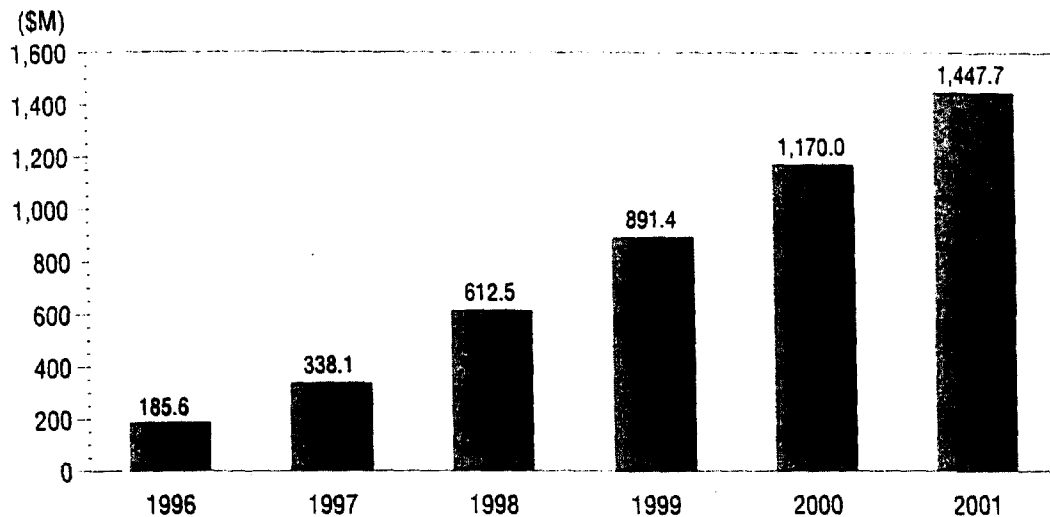


Source: International Data Corporation, 1997

Most local providers, joining early-starter U S West, stepped up their frame relay marketing efforts beginning in early 1996, and aggressive commitments to frame relay will continue during the forecast period.

As Figure 17 illustrates, the local market will reach \$1.4 billion by 2001, for a 1996–2001 CAGR of 51%. The local frame relay market had 11,058 customers in 1996 with 98,609 ports in service (see Table 9). Most local providers, joining early-starter U S West, stepped up their frame relay marketing efforts beginning in early 1996, and aggressive commitments to frame relay will continue during the forecast period as local providers introduce new applications and features such as higher-speed access, PVC prioritization, dial-up access, and managed solutions for small and medium-sized businesses.

Figure 17
U.S. Local Frame Relay Service Revenue, 1996-2001



Source: International Data Corporation, 1997

Table 9
U.S. Local Frame Relay Customers and Port Installed Base, 1996-2001

	1996	1997	1998	1999	2000	2001	1996-2001 CAGR (%)
Customers	11,058	17,257	23,728	31,759	38,632	43,448	31.5
Ports	98,609	172,565	284,733	412,863	540,850	651,724	45.9
Average ports per customer	9	10	12	13	14	15	11.0

Source: International Data Corporation, 1997

Local provider port speed segmentation is presented in Table 10. At yearend 1996, the bulk of local frame relay connections (71%) were at 56Kbps, and 21% of connections were at T1. Many LECs now offer fractional T1 frame relay service, and nearly all local providers will have rolled out T3 and or fractional T3 service by late 1997 or early 1998. During the forecast period, IDC projects that the port speed mix will shift in favor of higher speeds as customer bandwidth requirements increase because of application demand and traffic integration.

Other network service providers will emerge as a key customer segment for local providers toward the end of the forecast period.

Table 11 presents local frame relay service revenue by customer type from 1996 to 2001. During the forecast period, corporate customers' contribution to total revenue will remain relatively stable: 40% in 1996, compared with 42% in 2001. The major shift occurs in the other network service provider segment, whose contribution to the total increases from 14% in 1996 to 27% in 2001. IDC expects that other network service providers will emerge as a key customer

segment for local providers toward the end of the forecast period. Those local providers that had not aggressively sought out the ISPs as customers will begin to do so, joining providers such as Bell Atlantic and Pacific Bell in tapping this market segment. IDC predicts that the education and government segments will decline as a percentage of total revenue as frame relay continues its march toward the mass business market and as some customers in this segment migrate to ATM or IP.

Table 10
U.S. Local Frame Relay Port Installed Base Share by Access Speed, 1996-2001 (%)

	1996	1997	1998	1999	2000	2001
Under 56Kbps	0.0	0.0	0.0	0.0	0.0	0.0
56/64Kbps	71.3	68.8	66.1	64.3	62.2	60.0
Fractional T1	7.2	8.0	9.0	9.0	9.5	10.5
T1	21.4	23.0	24.5	26.1	27.5	28.5
Fractional T3/T3	0.1	0.2	0.4	0.6	0.8	1.0
Total ports	98,609	172,565	284,733	412,863	540,850	651,724

Source: International Data Corporation, 1997

Table 11
U.S. Local Frame Relay Service Revenue Share by Customer Type, 1996-2001 (%)

	1996	1997	1998	1999	2000	2001
Corporate	40.0	40.0	41.0	41.0	42.0	42.0
Education	23.0	22.0	20.0	18.0	16.0	15.0
Government	23.0	22.0	21.0	20.0	18.0	16.0
Other network service providers	14.0	16.0	18.0	21.0	24.0	27.0
Total revenue (\$M)	185.6	338.1	612.5	891.4	1,170.0	1,447.7

Source: International Data Corporation, 1997

Local Frame Relay Forecast Assumptions

The assumptions listed in the previous section also apply to the local frame relay market. However, the following assumptions address the unique dynamics of the local frame relay market:

- In previous years, IDC assumed slower growth of the local frame relay market primarily because of its less aggressive feature/applications rollouts and marketing than the national/international providers. However, the local providers have intensified their efforts during the past 18 months and are rolling out offerings that are comparable in functionality to those of national/international providers.

Network-to-network interface (NNI) agreements between local and IXC networks gradually are becoming more widespread.

- To some extent, private lines compete more successfully with frame relay in the local market, particularly over short distances. However, local frame relay pricing has declined over the past few years, making the potential cost savings with frame relay more immediately apparent. As a result, prices remain relatively stable throughout the forecast period.
- Frame relay plays a dual role for local providers. It can be a service per se as well as an access service to national providers' networks. Frame relay is experiencing increasing penetration in areas with very large metropolitan zones, benefiting such carriers as Bell Atlantic, Nynex, Ameritech, and Pacific Bell.
- In regions with fewer large metropolitan areas, the access route becomes more of an opportunity. Companies in the BellSouth, SBC, GTE, and U S West regions typically support a number of dispersed locations. Though facilities expansion is more imperative for the carriers in these regions, it is less easily cost-justified. As a result, the ability to interconnect with the IXCs is critical.
- Network-to-network interface (NNI) agreements between local and IXC networks gradually are becoming more widespread. LDDS WorldCom has concluded the most NNI agreements, and some other carriers are coming along, albeit slowly. AT&T refuses to enter into NNI agreements. However, MCI has concluded a number of customer-dedicated NNI arrangements with several LECs, and Sprint has private NNIs with a number of local providers.
- IDC believes that NNI agreements between local and national services are critical to keeping frame relay prices down. On the local side, frame relay as an access service will continue to compete with private lines and other services for integrated traffic. However, for LAN internetworking and or SNA-to-LAN traffic, cross-country, end-to-end frame relay service availability is critical.
- Thus, IDC expects to see an increasing number of NNI connections throughout the forecast period, particularly as local providers seek to extend their geographic presence — initially on a regional basis. Therefore, some of the local ports included in this forecast will be NNI ports and not direct-to-customer locations.

National/International Frame Relay Market Share and Trends

The market for national/international frame relay services reached \$982.0 million in 1996. The three major IXCs collectively dominate the national/international frame relay market with a combined market share of 83% at midyear 1997 (see Figure 18). This percentage represents an increase from the yearend 1996 total of 80.4% (see Figure 19).

Figure 18
U.S.-Based National/International Frame Relay Service Revenue Share by Provider, Midyear 1997

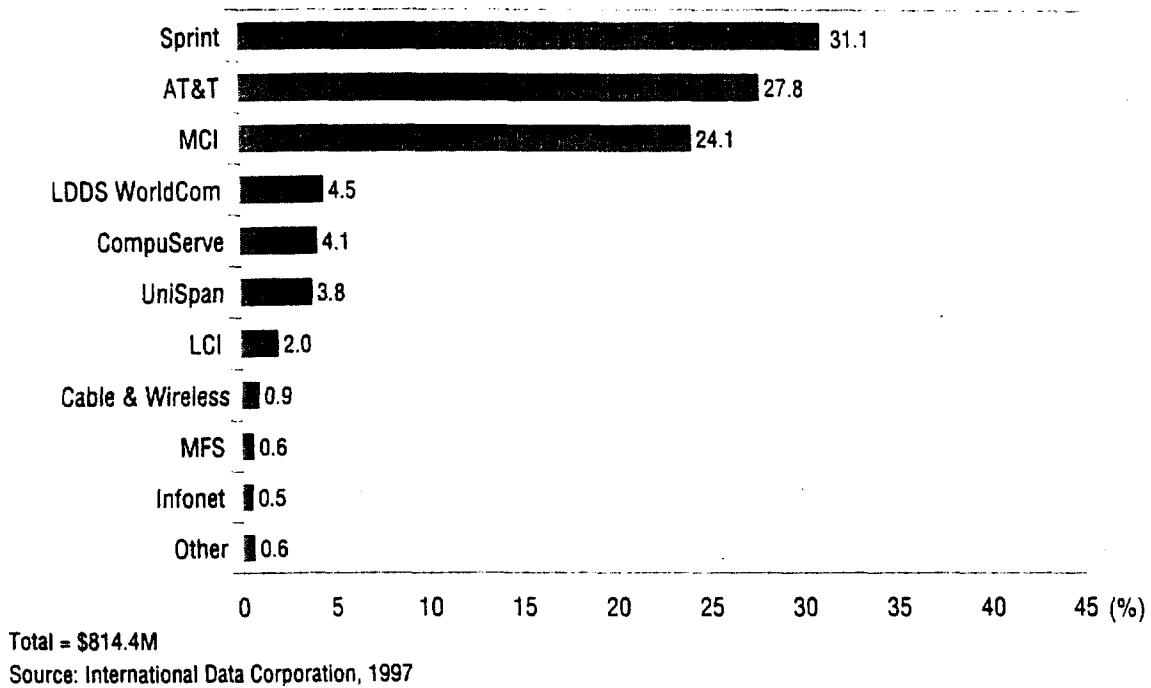
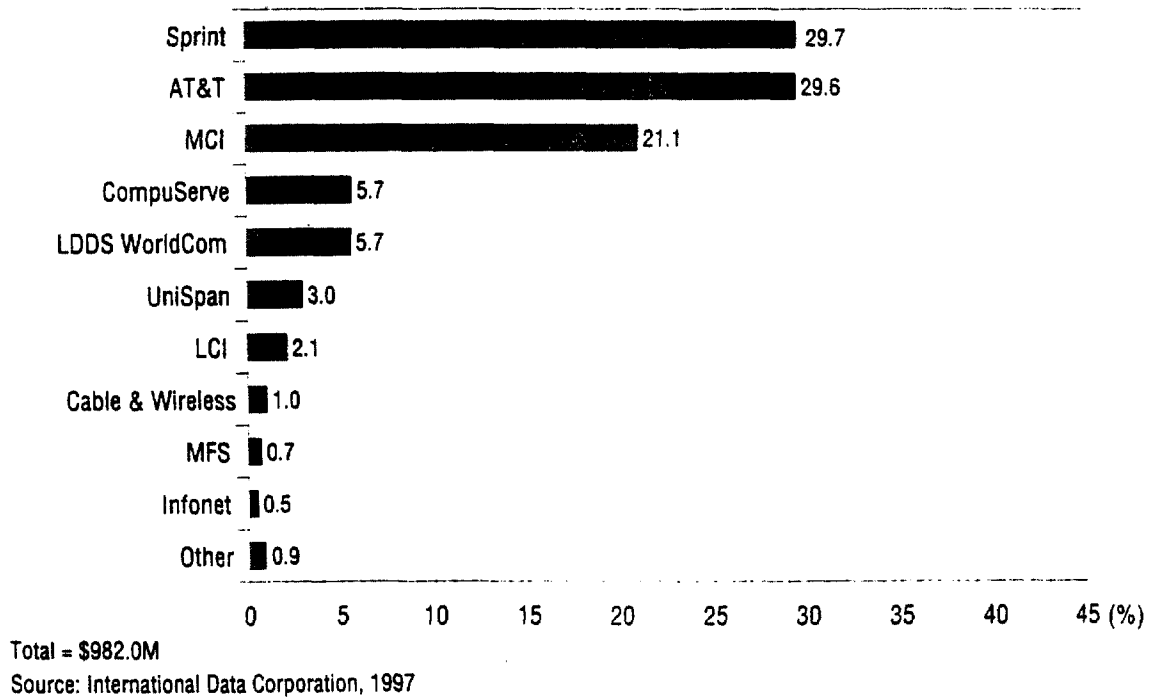


Figure 19
U.S.-Based National/International Frame Relay Service Revenue Share by Provider, Yearend 1996

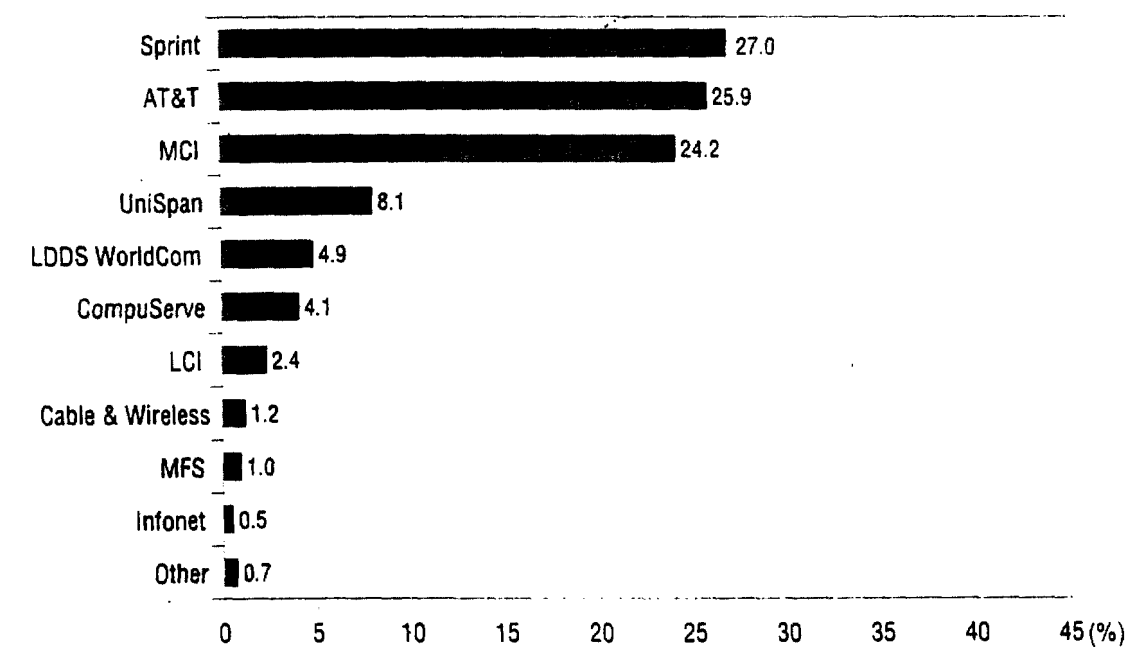


Sprint, with a revenue-based market share of 31.1% at midyear 1997, is the market leader, followed by AT&T (27.8%) and MCI (24.1%).

Sprint, with a revenue-based market share of 31.1% at midyear 1997, is the market leader, followed by AT&T (27.8%) and MCI (24.1%). Figures 20 and 21 show that the port-based market share tracks relatively closely with the revenue-based figures. Sprint accounted for 27.0% of total ports at midyear 1997, followed by AT&T (25.9%) and MCI (24.2%). Both Sprint and AT&T have lower proportions of 56Kbps ports in service, compared with MCI. However, MCI has also pushed ahead more aggressively in fractional T3 frame relay than its IXC counterparts.

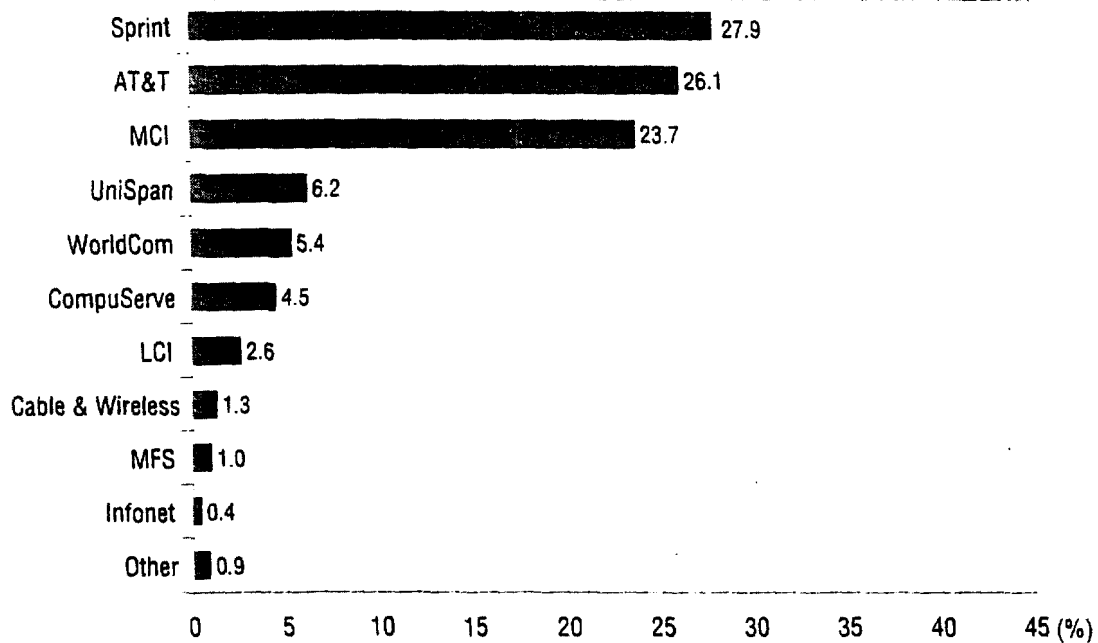
As illustrated by Figure 22, IDC projects that national frame relay revenue will amount to nearly \$6.2 billion by 2001, reflecting a 1996-2001 CAGR of almost 45%. Table 12 shows that the national/international frame relay market had 11,637 customers in 1996 with 161,416 ports in service. In 2001, the customer base will reach 46,284 with 925,687 ports in service, for a 1996-2001 total port CAGR of 42%. The national/international market will continue to grow significantly during the forecast period as providers continue to introduce new applications and features such as a wider range of higher-speed access options, more extensive service-level guarantees, broader ranges of managed service solutions, and eventually, support for voice over frame relay and SVC.

Figure 20
U.S.-Based National/International Frame Relay Port Installed Base Share by Provider, Midyear 1997



Source: International Data Corporation, 1997

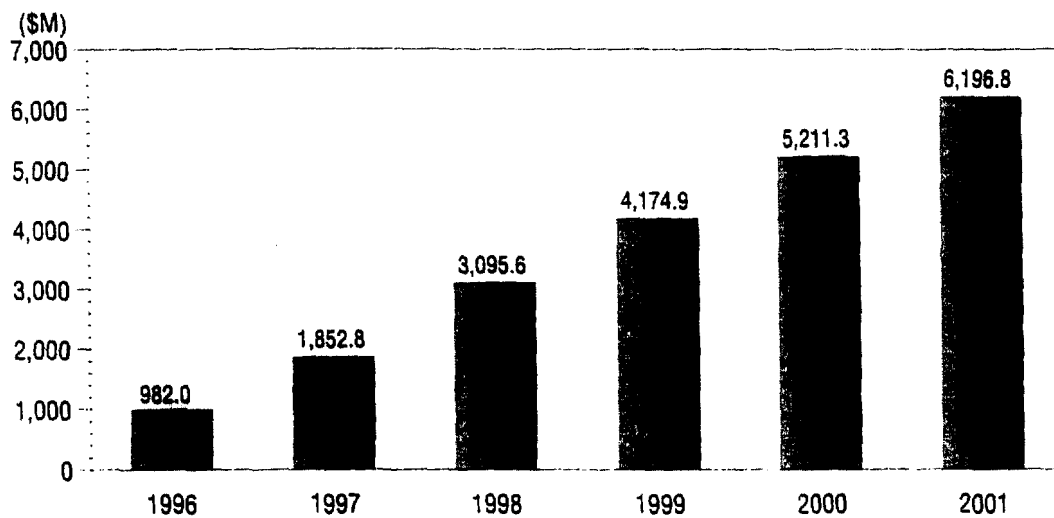
Figure 21
U.S.-Based National/International Frame Relay Port Installed Base Share by Provider, Yearend 1996



Total = 161,416

Source: International Data Corporation, 1997

Figure 22
U.S.-Based National/International Frame Relay Service Revenue, 1996-2001



Source: International Data Corporation, 1997

Table 12
U.S.-Based National/International Frame Relay Customers and Port Installed Base, 1996-2001

	1996	1997	1998	1999	2000	2001	1996-2001 CAGR (%)
Customers	11,637	16,142	23,244	31,379	39,224	46,284	31.8
Ports	161,416	290,548	464,877	627,584	784,480	925,687	41.8
Average ports per customer	14	18	20	20	20	20	7.6

Source: International Data Corporation, 1997

National/international provider port speed segmentation is presented in Table 13. At yearend 1996, 66% of national/international frame relay connections were at 56Kbps. The overall contribution of this segment will decrease to 49% in 2001, but will continue to grow in terms of port count because of new customer growth in the medium-sized company segment. In 1996, 24% of connections were at T1, and IDC projects a total fractional T1 contribution of 30% by 2001. The T3/fractional T3 segment will increase from less than 1% of total ports in 1996 to nearly 4% by 2001. Growth in this segment will result from the higher-bandwidth requirements of customers' aggregated traffic (particularly ISPs).

IDC expects that other network service providers will become a more important customer segment for national providers, increasing from 9% of total revenue in 1996 to 14% in 2001 as the providers pursue ISP opportunities more aggressively.

Table 14 presents national/international frame relay service revenue by customer type from 1996 to 2001. During the forecast period, corporate customers' contribution to total revenue is expected to remain relatively stable — 62% in 1996 compared with slightly more than 64% in 2001. A shift will occur in the other network service provider segment from 1996 to 2001. IDC expects that other network service providers will become a more important customer segment for national providers, increasing from 9% of total revenue in 1996 to 14% in 2001 as the providers pursue ISP opportunities more aggressively. However, IDC expects that ISPs will account for a smaller percentage of national providers' total business compared with the LECs, given that the national providers also sell IP wholesale services.

Table 13
U.S.-Based National/International Frame Relay Port Installed Base Share by Access Speed, 1996-2001 (%)

	1996	1997	1998	1999	2000	2001
Under 56Kbps	0.0	0.1	0.1	0.0	0.0	0.0
56/64Kbps	66.1	60.9	55.0	53.0	51.0	49.0
Fractional T1	24.2	26.0	29.0	30.0	31.0	30.0
T1	9.4	12.5	15.0	16.0	16.0	17.3
Fractional T3/T3	0.3	0.5	0.9	1.0	2.0	3.7
Total ports	161,416	290,548	464,877	627,584	784,480	925,687

Source: International Data Corporation, 1997

Table 14
U.S.-Based National/International Frame Relay Service Revenue Share
by Customer Type, 1996-2001 (%)

	1996	1997	1998	1999	2000	2001
Corporate	62.0	62.5	63.0	63.5	64.0	64.5
Education	12.0	11.5	11.0	10.5	10.0	9.5
Government	17.0	16.0	15.0	14.0	13.0	12.0
Other network service providers	9.0	10.0	11.0	12.0	13.0	14.0
Total revenue (\$M)	982.0	1,852.8	3,095.6	4,174.9	5,211.3	6,196.8

Source: International Data Corporation, 1997

National/International Frame Relay Forecast Assumptions

The following assumptions are specific to the national/international frame relay market:

- The average number of ports per customer is on the rise; the IXC's, in particular, are signing on very large customers with hundreds of sites. In 1996, the average number of ports was 14, and IDC forecasts that this will increase to 20 in 1998. According to IDC, from 1998 to 2001, the average number of ports per customer will remain constant as frame relay saturates top corporate accounts and begins to move downstream to medium-sized and smaller companies. As a result, the rates of year-over-year customer and port growth will converge toward the end of the forecast period.
- The market continues to be dominated by the three largest IXC's. IDC believes that in addition to name recognition, these companies lead the market because of corporations' desire to have a single transport supplier. Only the very largest companies want to leverage multiple carrier relationships to support enterprise requirements.
- Competitive pressures will encourage national frame relay providers to enhance their service offerings. IXC's and VAN providers' frame relay services are being compared on measures that extend beyond service reliability. These include higher-speed access, PVC prioritization, service-level guarantees, and disaster-recovery options.
- Network management alternatives are becoming more important to larger users as they consider migration from private line environments. Customer network management and reporting options are evolving from mere check-off items to critical differentiators. Currently, many providers are rolling out Web browser-based access and real-time CIR reconfiguration capabilities.
- Another service differentiator has been international reach. Table 15 and Figure 23 present IDC's forecast for U.S.-based

Network management alternatives are becoming more important to larger users as they consider migration from private line environments.

frame relay carriers' domestically and internationally generated traffic.

U.S.-based traffic as a share of total national/international revenue decreased from nearly 84% in 1996 to just over 80% in 2001. Western Europe's share of total U.S.-based provider revenue will increase from 11% in 1996 to more than 12% in 2001. The Asia/Pacific region will account for 6% of the total by 2001.

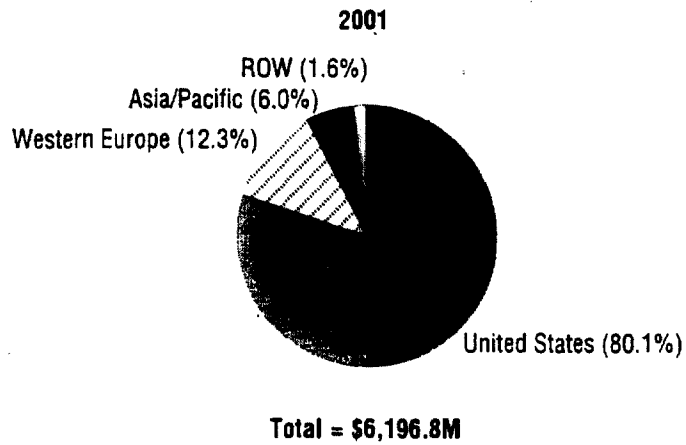
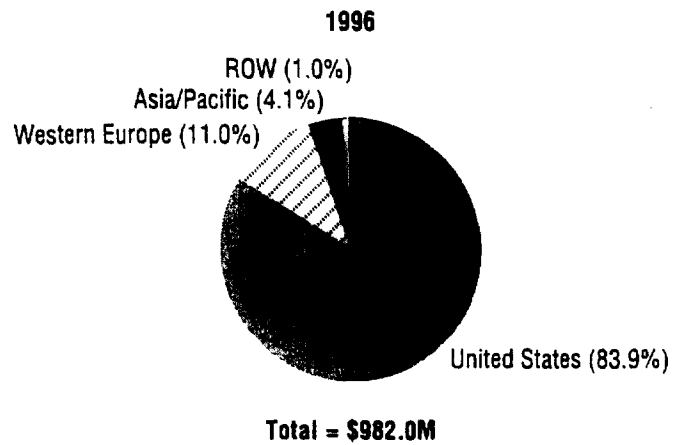
U.S.-based providers such as Sprint, AT&T, and MCI can leverage global alliances/joint ventures to provide end-to-end service for U.S.-based customers. However, frame relay services are available from a number of telecommunications carriers outside the United States, and IDC believes that, apart from multinational traffic, national operators in overseas markets will retain the bulk of frame relay market share. Outside the United States, the proportion of LAN data transported over WANs is growing, and this development is motivating customers to migrate some or all of their traffic from existing private line- or X.25-based networks to frame relay.

Table 15
U.S.-Based National/International Frame Relay Service Revenue by Region, 1996-2001 (\$M)

	1996	1997	1998	1999	2000	2001	1996-2001 CAGR (%)
United States	824	1,552	2,569	3,423	4,221	4,967	43.2
Western Europe	108	208	356	491	625	759	47.6
Asia/Pacific	40	79	139	209	287	372	56.3
ROW	10	14	31	52	78	99	57.5
Total	982.0	1,852.8	3,095.6	4,174.9	5,211.3	6,196.8	44.5

Source: International Data Corporation, 1997

Figure 23
U.S.-Based National/International Frame Relay Service Revenue Share by Region, 1996 and 2001



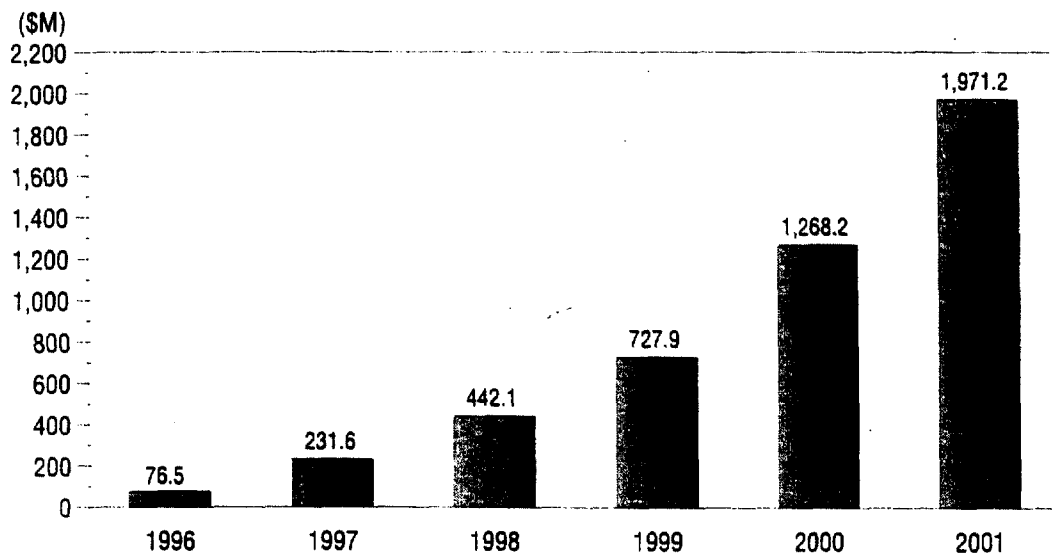
Source: International Data Corporation, 1997

ATM Services

The ATM services market will grow to nearly \$2 billion by 2001, reflecting a 1996–2001 CAGR of 92%.

IDC expects the ATM services market to grow to \$232 million by yearend 1997, a 203% increase from its yearend 1996 level of \$76.5 million (see Figure 24). The ATM services market will grow to nearly \$2 billion by 2001, reflecting a 1996–2001 CAGR of 92%. The ATM market is currently poised for take-off as the standards begin to settle down and as providers roll out additional service options such as T1 ATM and SVCs. In addition, providers are moving toward support of all ATM classes of service to enable a broader range of applications.

Figure 24
U.S. ATM Service Revenue, 1996–2001



Source: International Data Corporation, 1997

Table 16 shows the projected growth of ATM customers and ports. The total number of customers and ports will increase significantly through 2001, with 1996–2001 CAGRs of 68% and 92%, respectively. Port growth will outstrip customer growth from 1996 to 2001 as the early adopters add more ports and deploy ATM more extensively in their WANs. However, growth in average number of ports per customer will be tempered somewhat by the emergence of frame-relay-to-ATM service interworking, whereby customers will use a single ATM link at the hub site with frame relay links to smaller sites.

Table 16
U.S. ATM Customers and Port Installed Base, 1996-2001

	1996	1997	1998	1999	2000	2001	1996-2001 CAGR (%)
Customers	310	649	1,087	1,752	2,886	4,171	68.2
Ports	1,067	2,966	5,695	9,962	17,588	27,787	91.9
Average ports per customer	3	5	5	6	6	7	14.1

Source: International Data Corporation, 1997

T1 ATM services will make their mark during the middle of the forecast period, enabling the early entry of small users into the ATM market and providing a more cost-effective way for existing customers to expand ATM connectivity throughout their WANs.

ATM began its march toward more widespread implementation in 1996 as corporate customers moved from the trial and evaluation phase to the commercial-use phase.

Shifts in the port speed mix will also influence ATM market growth. Table 17 and Figure 25 present IDC's port speed segmentation forecasts. T1 ATM services will make their mark during the middle of the forecast period, enabling the early entry of small users into the ATM market and providing a more cost-effective way for existing customers to expand ATM connectivity throughout their WANs. T1 ATM services, accounting for nearly 17% of total ports in 1996, will represent slightly more than 30% of the market in 2001. T3 ATM services, currently the most widely available access speed option, will experience a decline in their share of the overall market — from more than two-thirds of the total in 1996 to just over half of the total in 2001 — as the ATM T3 segment of this market shifts and lower-speed (T1) and higher-speed (OC-3) ports account for a greater proportion of total ATM ports. OC-3 ATM services, representing nearly 16% of the market in 1996, will account for more than 19% in 2001.

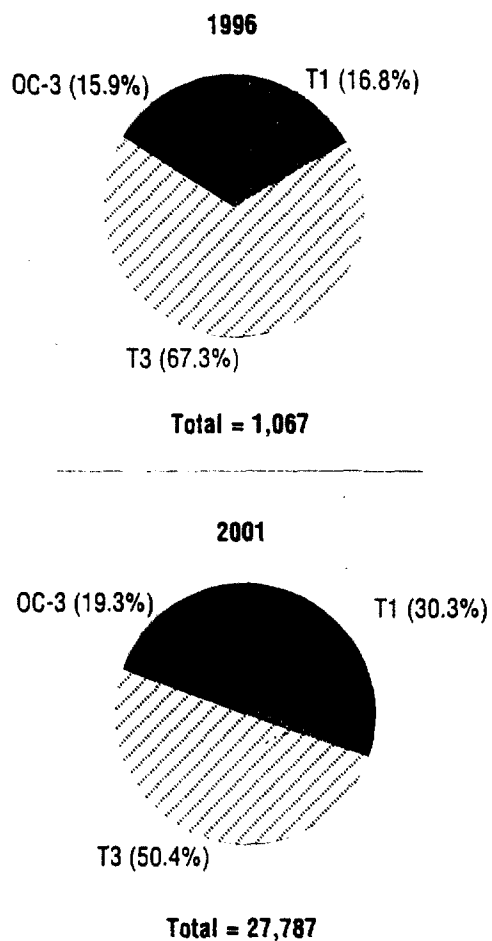
Table 18 and Figure 26 present IDC's ATM services revenue forecast analyzed by customer type. During the forecast period, the customer base will shift in favor of corporate customers. This segment accounted for nearly 50% of ATM service revenue in 1996; this share will rise to 61% in 2001. ATM began its march toward more widespread implementation in 1996 as corporate customers moved from the trial and evaluation phase to the commercial-use phase.

Table 17
U.S. ATM Port Installed Base by Access Speed, 1996-2001

	1996	1997	1998	1999	2000	2001	1996-2001 CAGR (%)
T1	179	557	1,095	2,220	4,499	8,419	116.0
T3	718	1,955	3,647	5,960	9,883	13,999	81.1
OC-3	170	460	952	1,782	3,206	5,369	99.5
Total	1,067	2,966	5,695	9,962	17,588	27,787	92.9

Source: International Data Corporation, 1997

Figure 25
U.S. ATM Port Installed Base Share by Access Speed, 1996 and 2001



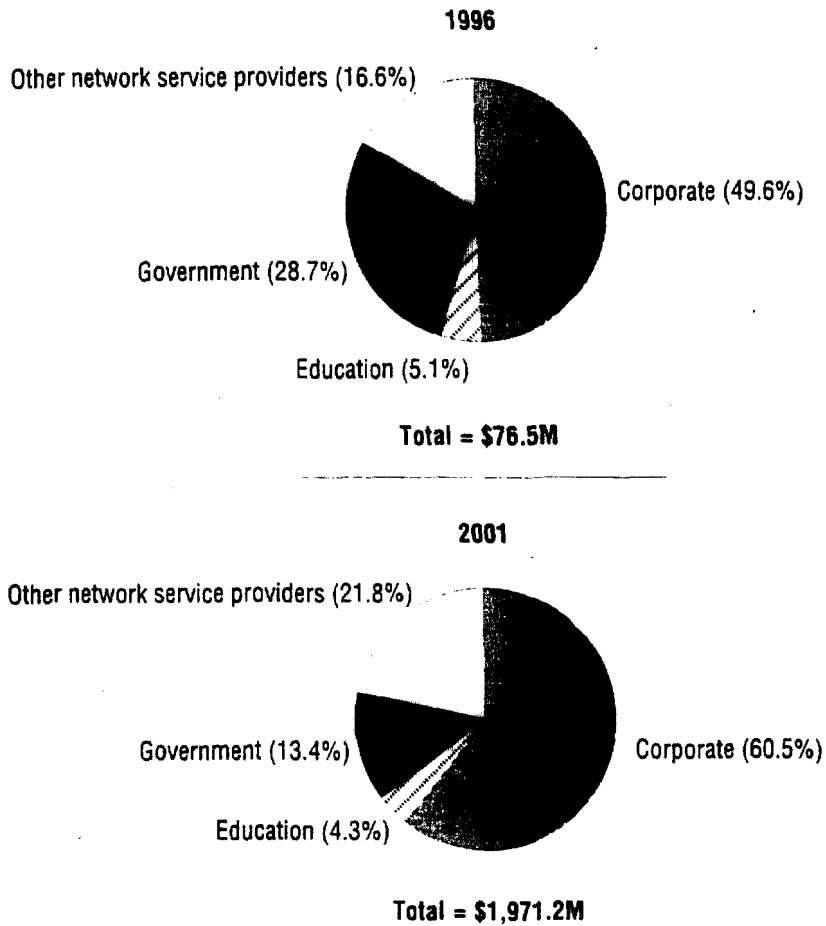
Source: International Data Corporation, 1997

Table 18
U.S. ATM Service Revenue by Customer Type, 1996-2001 (\$M)

	1996	1997	1998	1999	2000	2001	1996-2001 CAGR (%)
Corporate	37.9	117.8	234.3	403.0	740.9	1,193.6	99.3
Education	3.9	12.6	22.9	39.1	60.2	84.3	84.8
Government	22.0	61.9	103.9	145.0	205.8	263.5	64.4
Other network service providers	12.7	39.2	81.0	140.7	261.2	429.8	102.4
Total	76.5	231.6	442.1	727.9	1,268.2	1,971.2	91.5

Source: International Data Corporation, 1997

Figure 26
U.S. ATM Service Revenue Share by Customer Type, 1996 and 2001



Source: International Data Corporation, 1997

ISPs are becoming a key customer segment, using ATM for backbone aggregation to accommodate rapidly growing traffic flows.

Other network service providers represented 17% of revenue in 1996 and will account for 22% of the total in 2001. ISPs are becoming a key customer segment, using ATM for backbone aggregation to accommodate rapidly growing traffic flows. Given the rapid emergence of the commercial ATM customer base, the early-adopter government segment will decline as a percentage of the total, from 29% of revenue in 1996 to approximately 13% in 2001. The education segment's share will decline slightly over the forecast period, partially because national/international providers are not major players in this market segment.

Market Forecast Assumptions

The following forecast assumptions relate to the ATM market as a whole (assumptions specific to the local and national/international markets are outlined in the next section):

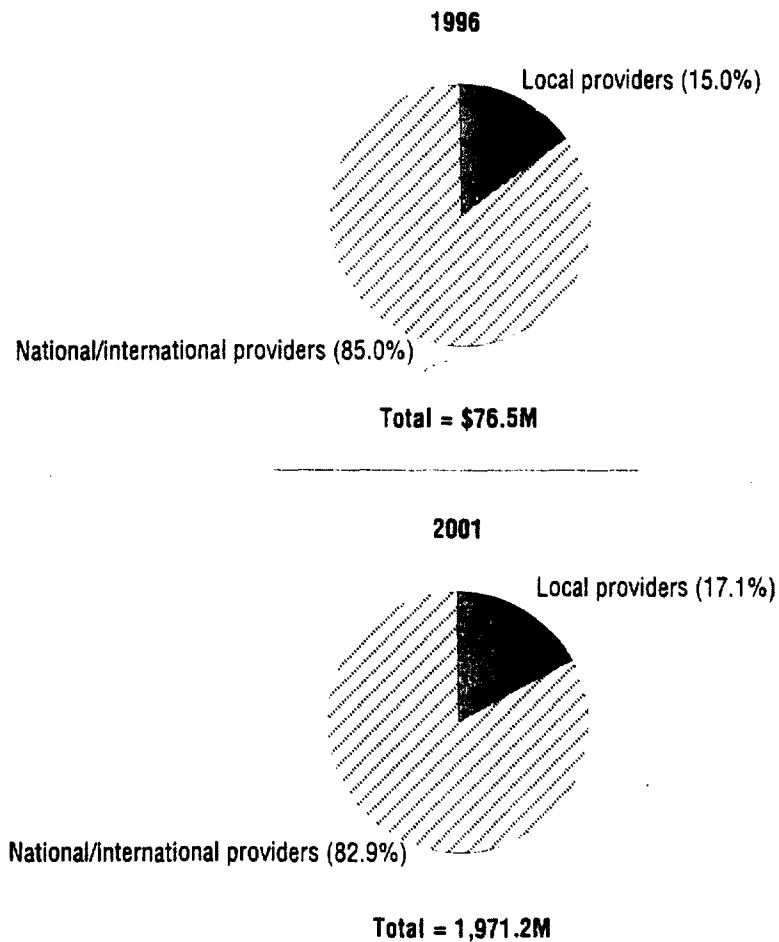
- T1 ATM services have already begun to influence the market. Most local and national providers have already rolled out the service, which provides a lower-cost entry for smaller customers (particularly for multimedia traffic) and facilitates the expansion of ATM connectivity to smaller sites.
 - Additional ATM functionality will contribute to more mass business market acceptance of ATM. AT&T introduced ATM SVCs in early 1997, and most other providers plan commercial rollouts in 1997 or 1998. The benefits associated with SVCs include increased network flexibility and scalability, point-to-multipoint connection capabilities, the ability to communicate with users of other providers' ATM services, and (in some cases) lower per-month charges, depending on usage characteristics.
 - ATM service at speeds higher than T3 will become more significant during the forecast period, representing the greatest revenue opportunity for providers. At the same time, additional providers will also launch fractional T3 ATM service using standards-based inverse multiplexing (rolled out by MCI earlier this year). Inverse multiplexing offers customers a wider range of access options and greater control over network growth, bridging the broad gap between T1 and T3 access.
 - Migration and coexistence strategies have now become an important component of ATM service marketing. The increased availability of frame-relay-to-ATM service interworking will drive the market for ATM services while enabling customers to control the pace and scope of migration to ATM services.
 - The growth of the Internet is a key driver for the ATM service market because ISPs are implementing ATM in their backbones to aggregate traffic and connect to network access points. During late 1996 and early 1997, many providers reported increased sales to ISP customers.
 - ATM is still an evolving technology, and standards activity is ongoing. Recent activities include specifications for Multiprotocol over ATM (MPOA), LAN Emulation over ATM (LANE), Inverse Multiplexing for ATM (IMA), Circuit Emulation (CE), and Frame-Based User-to-Network Interface (FUNI).
 - ATM has shifted from its original iteration as an all-encompassing, end-to-end corporate networking solution to a high-speed WAN transport alternative, especially for LAN interconnection applications. Carriers are seeing increased demand for transparent LAN service — e.g., the CLECs and Bell Atlantic — but they are pricing this service aggressively. However, the quality of service features that support multimedia applications has not yet been fully exploited, partially because
- AT&T introduced ATM SVCs in early 1997, and most other providers plan commercial rollouts in 1997 or 1998.*
- Migration and coexistence strategies have now become important components of ATM service marketing.*
- ATM has shifted from its original iteration as an all-encompassing, end-to-end corporate networking solution to a high-speed WAN transport alternative, especially for LAN interconnection applications.*

service providers have just begun to offer the full range of ATM classes of service.

Segmentation Analysis: Local and National/International Market

As shown in Figure 27, local providers accounted for 15% of ATM revenue in 1996. IDC forecasts that this segment will account for only 17% of total ATM revenue by 2001 because of significantly lower price points than the national/international sector.

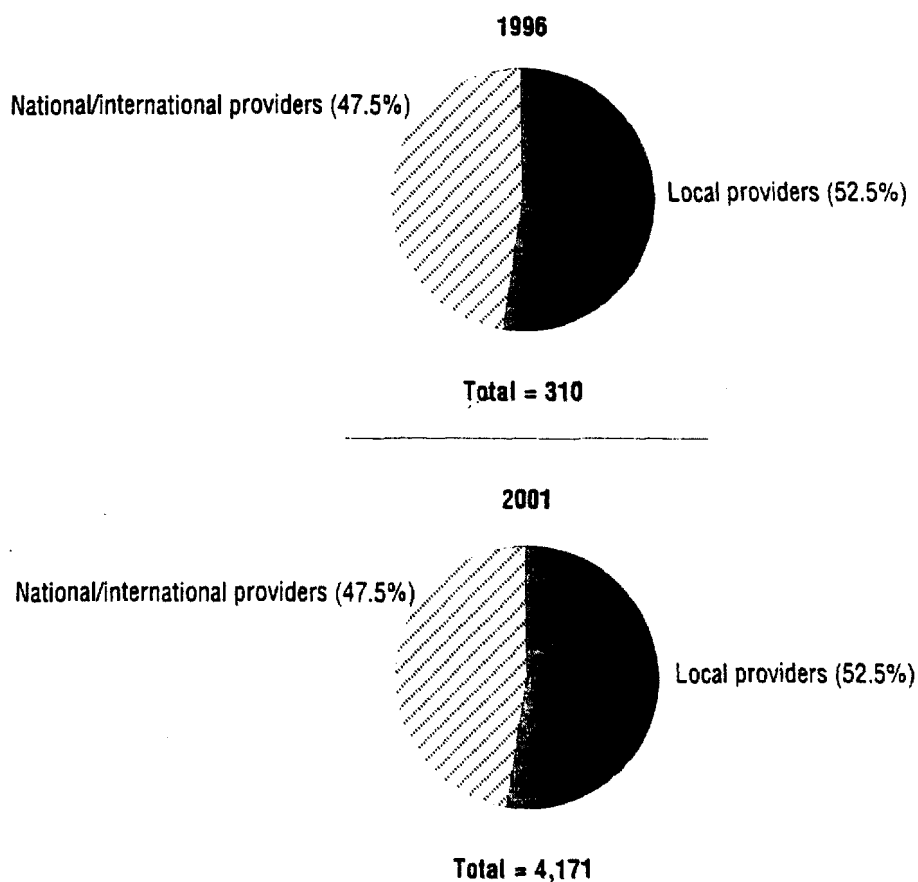
Figure 27
U.S. ATM Service Revenue Share by Provider Segment, 1996 and 2001



Source: International Data Corporation, 1997

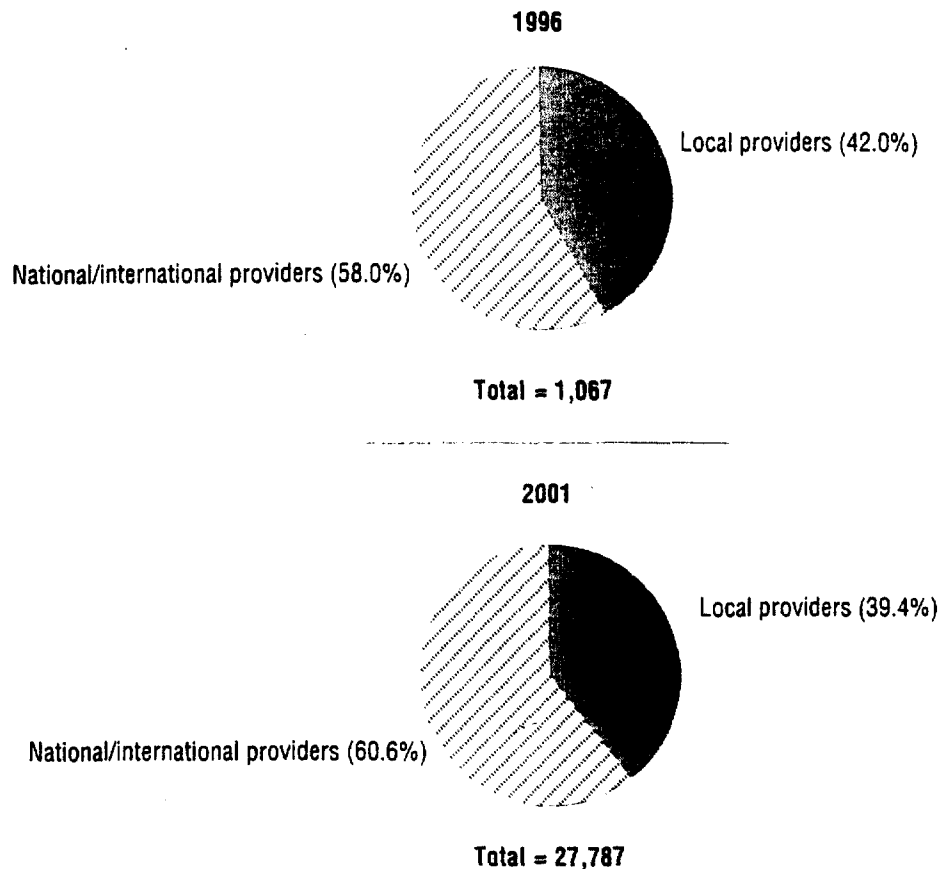
With regard to port and counts, however, the two segments are more evenly matched. In 1996, local providers accounted for 53% of total ATM customers, compared with national providers' 48% (see Figure 28). Similarly, local providers accounted for 42% of total frame relay ports in 1996, compared with national providers' 58% (see Figure 29). IDC does not expect a significant segmentation shift in either category during the forecast period; however, local providers' percentage of total ports and customers is expected to decrease only slightly in 2001.

Figure 28
U.S. ATM Customer Share by Provider Segment, 1996 and 2001



Source: International Data Corporation, 1997

Figure 29
U.S. ATM Port Installed Base Share by Provider Segment, 1996 and 2001



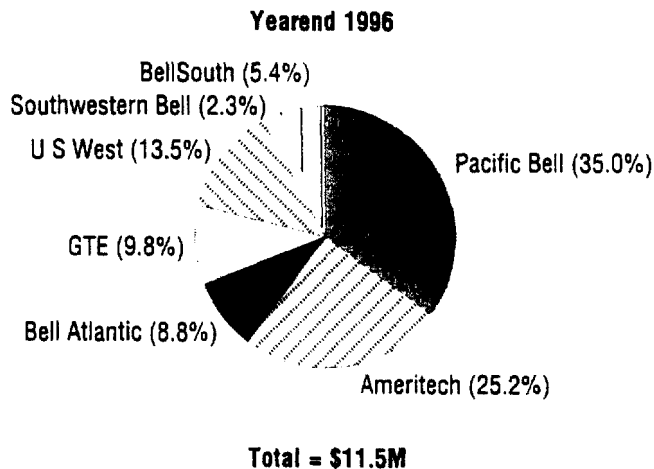
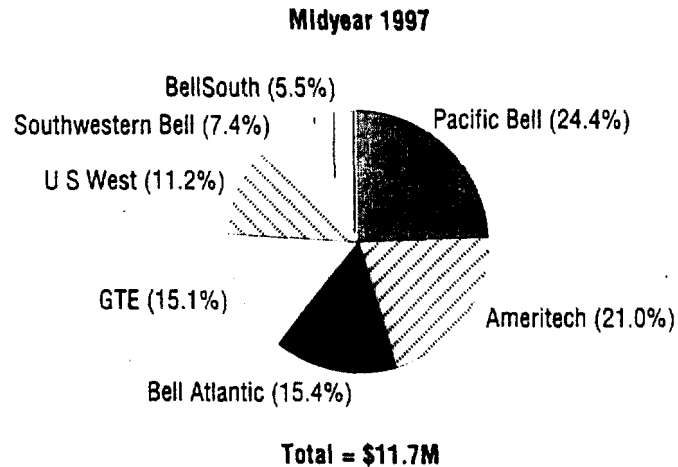
Source: International Data Corporation, 1997

Local ATM Market Share and Trends

The market for local ATM services reached \$11.5 million in 1996.

The market for local ATM services reached \$11.5 million in 1996. Figures 30 and 31 present local ATM market shares (by revenue and by ports) for midyear 1997 and yearend 1996. Pacific Bell leads the market in revenue terms with a 24.4% market share, followed by Ameritech (21.0%), Bell Atlantic (15.4%), and GTE (15.1%). Pacific Bell and Ameritech, to a lesser extent, experienced considerable drops in revenue-based market shares due greatly to the rapid growth of Bell Atlantic's ATM services, launched in mid-1996. GTE also witnessed substantial revenue gains from yearend 1996 through midyear 1997 because of new customer growth and the popularity of its Virtual Central Office managed ATM offering. Southwestern Bell, which launched its ATM service in mid-1996, built up its customer base through midyear 1997, concentrating on large customers with high-bandwidth requirements. (Note: Nynex generated 0.0% share so is not represented in the figures.)

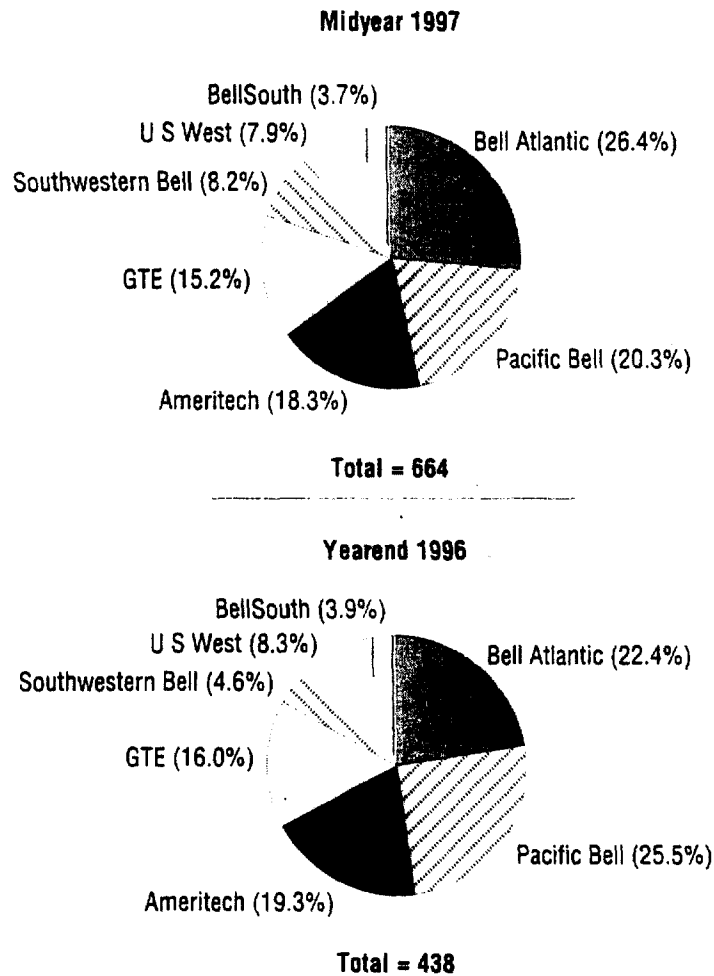
Figure 30
U.S. Local ATM Service Revenue Share by Provider, Midyear 1997 and Yearend 1996



Source: International Data Corporation, 1997

Local provider port-based market share standings reflect the various port speed mixes of individual providers' customer bases. Bell Atlantic, in the number-three position based on revenue, leads the market in terms of ports with a 26.4% market share in midyear 1997. This situation exists because Bell Atlantic has a higher proportion of T1 ports in service than do Pacific Bell and Ameritech, resulting in lower overall ATM revenue. Similarly, Ameritech has a higher proportion of OC-3 ports in service than does Pacific Bell.

Figure 31
U.S. Local ATM Port Installed Base Share by Provider, Midyear 1997 and Yearend 1996

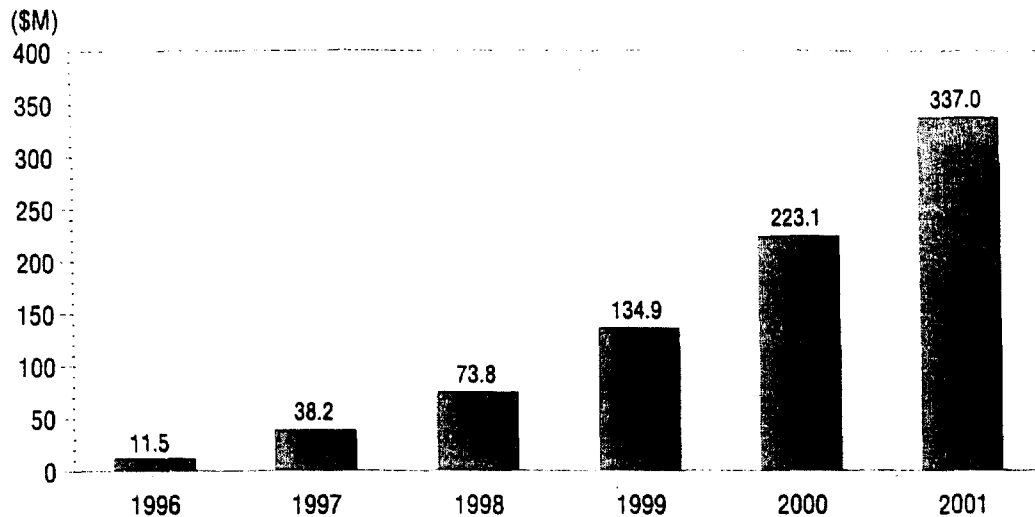


Source: International Data Corporation, 1997

IDC forecasts that the local ATM market will reach \$337.0 million in 2001 (see Figure 32). Table 19 shows that local ATM providers had 163 customers and 438 ports in service at yearend 1996. IDC projects that the local provider customer base will increase to nearly 2,220 by the end of the forecast period, fueled largely by new customers in the medium-sized corporate segment. Total ports will increase to almost 11,000 as local providers expand their ATM networks and pursue the ISP customer segment more aggressively.

Local provider port speed segmentation is presented in Table 20. Throughout the forecast period, the market shifts slightly away from T3 (57% of total ports in 1996) toward T1 and OC-3.

Figure 32
U.S. Local ATM Service Revenue, 1996-2001



Source: International Data Corporation, 1997

Table 19
U.S. Local ATM Customers and Port Installed Base, 1996-2001

	1996	1997	1998	1999	2000	2001	1996-2001 CAGR (%)
Customers	163	337	547	978	1,570	2,191	68.0
Ports	438	1,094	2,188	4,157	7,067	10,954	90.4
Average ports per customer	3	3	4	4	5	5	13.3

Source: International Data Corporation, 1997

Table 20
U.S. Local ATM Port Installed Base Share by Access Speed, 1996-2001 (%)

	1996	1997	1998	1999	2000	2001
T1	15.7	17.5	18.0	18.5	19.0	20.0
T3	56.6	55.0	54.5	54.0	53.5	52.5
OC-3	27.7	27.5	27.5	27.5	27.5	27.5
Total ports	438	1,094	2,188	4,157	7,067	10,954

Source: International Data Corporation, 1997